

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

7A4
Revision 7
PIAGGIO
P.166
P.166B
P.166C
P.166 DL3

October 31, 1978

TYPE CERTIFICATE DATA SHEET NO. 7A4

This data sheet which is a part of type certificate No. 7A4 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

Type Certificate Holder Industrie Aeronautiche e Meccaniche
Rinaldo Piaggio, S.p.A. (formerly Piaggio & Co.)
Genoa, Italy

I - Model P.166 (Normal Category), Approved July 31, 1958.

Engines	2 Lycoming GSO-480-B1C6	
Fuel	100/130 Minimum grade aviation gasoline	
Engine limits	(Straight line manifold pressure variation with altitudes shown).	
	<u>H.P.</u>	<u>R.P.M.</u>
Takeoff	340	3400
Takeoff	340	3400
Maximum continuous	320	3200
Maximum continuous	320	3200
	<u>MP</u>	<u>ALT. (Ft.)</u>
	48.0	S.L.
	44.5	7900
	45.0	S.L.
	43.0	8000
Propeller and propeller limits	Hartzell HC-83X20-2CL/L9333CH, 3-bladed metal or Hartzell HC-A3X20-2CL/L9333CH, 3-bladed metal Pitch setting at 30 in. station: Low 15° High 83° Diameter: Maximum 93 in., minimum allowable for repairs 92 in. (no further reduction permitted).	
Airspeed limits	Vne (Never exceed)	261 m.p.h. (226 knots)
	Vno (Maximum structural cruising)	206 m.p.h. (179 knots)
	Vp (Maneuvering)	158 m.p.h. (137 knots)
	Vfe (Flaps down 0° to 23°)	150 m.p.h. (130 knots)
	Vfe (Flaps down 23° to 45°)	130 m.p.h. (113 knots)
	Vle (Landing gear extended)	161 m.p.h. (140 knots)
	Vmc (Minimum control)	90 m.p.h. (78 knots)
C.G. range (Landing gear extended)	(179.7) to (196.7) with 6720 lb., (179.7 to (194.7) with 7760 lb., (180.86) to (194.1) with 8115 lb.)	
	Straight line variation between points given.	
Empty weight C.G. range	None	
Datum	Nose of aircraft	

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I - Model P.166 (Normal Category) (cont'd)

Leveling means	Datum pads on rails of left pilot seat and on left passenger door frame.			
Maximum weight	8115 lb.			
Number of seats	8 (2 at (74.8), 3 at (111.8), 3 at (149.5)) (See NOTE 3 for other arrangement).			
Maximum baggage	Forward compartment	120 lb.	(235.0)	
	Rear compartment	400 lb.	(270.8)	
Fuel capacity	222 gal. (two main wing tanks, 56 gal. ea. (209.4)) (usable 55.4 gal. ea.) (two wing tip tanks, 55 gal. ea. (206.3)) (usable 54.4 gal. ea.)			
Oil capacity	8 gal. (two tanks, 4 gal. ea. (204.7)) (See NOTE 1 for data on system oil)			
Control surface movements	Wing flaps		Down	45° stabilizer - fixed
	Aileron	Up	25°	Down 19°
	Aileron tab	Up	18°	Down 18°
	Elevator	Up	30°	Down 16°
	Elevator tab	Up	20°	Down 25°
	Rudder	Right	27°	Left 27°
	Rudder tab	Right	21°	Left 21°

II - Model P.166B (Normal Category), Approved November 2, 1965.

Same as P.166 except increased HP engines, new engine nacelles, structural changes, increased weight and some minor changes.

Engines 2 Lycoming IGSO-540-A1C

Fuel 100/130 Minimum grade aviation gasoline

Engine limits (Straight line manifold pressure variation with altitudes shown).

	<u>H.P.</u>	<u>R.P.M.</u>	<u>MP</u>	<u>ALT. (Ft.)</u>
Takeoff	380	3400	47.0	S.L.
Takeoff	380	3400	43.5	10500
Maximum continuous	360	3200	45.0	S.L.
Maximum continuous	360	3200	41.7	10500

Propeller and propeller limits Hartzell HC-83Z30-2BL/L10151-8, 3-bladed metal
Pitch setting at 33 in. station: Low 17° High 82°
Diameter: Maximum 93 in., minimum allowable for repairs 92 in.
(no further reduction permitted).

Airspeed limits

Vne (Never exceed)	267 m.p.h. (231 knots)
Vno (Maximum structural cruising)	211 m.p.h. (183 knots)
Vp (Maneuvering)	171 m.p.h. (148 knots)
Vfe (Flaps down 0° to 23°)	151 m.p.h. (131 knots)
Vfe (Flaps down 23° to 45°)	130 m.p.h. (113 knots)
Vle (Landing gear extended)	166 m.p.h. (144 knots)
Vmc (Minimum control)	94.5 m.p.h. (82 knots)

C.G. range (Landing gear extended) (180.08) to (197.05) with 7495 lb., (183.94) to (193.97) with 8377 lb.
Straight line variation between points given.

Empty weight C.G. range None

Datum The reference plane is 226.97 in. before wing rear spar.

II - Model P.166B (Normal Category) (cont'd)

Leveling means	Datum pads on seat rails located sideways of pilot's and passenger's doors.			
Maximum weight	8377 lb.			
Number of seats	8 (2 at (74.8), 3 at (111.8), 3 at (149.5)) (See NOTE 3 for other seating arrangement).			
Maximum baggage	Forward compartment	120 lb. (235.0)		
	Rear compartment	400 lb. (270.8)		
Fuel capacity	222 gal. (two main wing tanks, 56 gal. ea. (209.4)) (usable 55.4 gal. ea.) (two wing tip tanks, 55 gal. ea. (206.3)) (usable 54.4 gal. ea.) See Note 1 for data on unusable fuel.			
Oil capacity	8 gal. (two tanks, 4 gal. ea. (204.7)) (See NOTE 1 for data on system oil)			
Control surface movements	Wing flaps		Down	45° stabilizer - fixed
	Aileron	Up 25°	Down	19°
	Aileron tab	Up 18°	Down	18°
	Elevator	Up 30°	Down	16°
	Elevator tab	Up 11°.30'	Down	20°
	Rudder	Right 27°	Left	27°
	Rudder tab	Right 21°	Left	21°

III - Model P.166C (Normal Category), Approved November 2, 1965.

Same as P.166B except increased weight, seating arrangement, landing gear and structural changes.

Engines	2 Lycoming IGSO-540-A1C				
Fuel	100/130 Minimum grade aviation gasoline				
Engine limits	(Straight line manifold pressure variation with altitudes shown).				
		<u>H.P.</u>	<u>R.P.M.</u>	<u>MP</u>	<u>ALT. (Ft.)</u>
	Takeoff	380	3400	47.0	S.L.
	Takeoff	380	3400	43.5	10500
	Maximum continuous	360	3200	45.0	S.L.
	Maximum continuous	360	3200	41.7	10500
Propeller and propeller limits	Hartzell HC-83Z230-2BL/L10151-8, 3-bladed metal Pitch setting at 33 in. station: Low 17° High 82° Diameter: Maximum 93 in., minimum allowable for repairs 92 in. (no further reduction permitted).				
Airspeed limits	Vne (Never exceed)	252 m.p.h. (219 knots)			
	Vno (Maximum structural cruising)	200 m.p.h. (174 knots)			
	Vp (Maneuvering)	173 m.p.h. (150 knots)			
	Vfe (Flaps down 0° to 23°)	151 m.p.h. (131 knots)			
	Vfe (Flaps down 23° to 45°)	130 m.p.h. (113 knots)			
	Vle (Landing gear extended)	166 m.p.h. (144 knots)			
	Vmc (Minimum control)	104 m.p.h. (90 knots)			
C.G. range (Landing gear extended)	(180.08) to (197.05) with 7495 lb., (186.03 to (193.20) with 8708 lb. Straight line variation between points given.				
Empty weight C.G. range	None				

 III - Model P.166C (Normal Category) (cont'd).

Datum	The reference plane is 226.97 in. before wing rear spar.			
Leveling means	Datum pads on seat rails located sideways of pilot's and passenger's doors.			
Maximum weight	8708 lbs.			
Number of seats	13 (2 at (74.8), 3 at (103.5 to 106.5), 2 at (131.9 to 133.5), 2 at (159.8 to 161.5), 2 at (194.8), 3 at (232.7).			
Maximum baggage	Rear compartment	400 lb. (270.8)		
Fuel capacity	112 gal. (two main wing tanks, 56 gal. ea. (209.4)) total, (usable 55.4 gal. ea.) (two wing tip tanks, 55 gal. ea. (206.3)) (usable 54.4 gal. ea.) may be installed as optional equipment. See Note 1 for data on unusable fuel.			
Oil capacity	8 gal. (two tanks, 4 gal. ea. (204.7)) (See NOTE 1 for data on system oil)			
Control surface movements	Wing flaps		Down	45° stabilizer - fixed
	Aileron	Up	25°	Down 19°
	Aileron tab	Up	18°	Down 18°
	Elevator	Up	30°	Down 16°
	Elevator tab	Up	11° .30'	Down 20°
	Rudder	Right	27°	Left 27°
	Rudder tab	Right	21°	Left 21°

 IV - Model P.166 DL3 (Normal Category), Approved October 31, 1978.

Engines	2 Avco-Lycoming LTP 101-600 or 2 Avco-Lycoming LTP 101-600A-1, or 2 Avco-Lycoming LTP 101-600A-1A (No intermixing of engines permitted.)
Fuel	ASTM D 1655-70 Jet A, Jet A1, Jet B. MIL-T-5624 Grades JP4, JP5.
Oil	MIL-L-7808
Engine limits	Static Sea Level Ratings

	LTP 101-600			
	Shaft Horsepower	Gas. Gen. R.P.M. %	Propeller Shaft R.P.M.	Max. Permissible Turbine Interstage Temp. - °C
	H.P.			
Takeoff (5 min.)	599	102.4	1950	763
Max. continuous	565	101.0	1950	740
Starting (12 sec.)	-	-	-	900
Trans. acceler. (12 sec.)	-	103.5	2112	843

IV - Model P.166 DL3 (Normal Category) (cont'd)

LTP 101-600A-1 and LTP 101-600A-1A				
	Shaft Horsepower H.P.	Gas. Gen. R.P.M. %	Propeller Shaft R.P.M.	Max. Permissible Turbine Interstage Temp. - °C
Takeoff (5 min.)	599	102.4	1950	771
Max. continuous	565	101.7	1950	757
Starting (12 sec.)	-	-	-	900
Trans. acceler. (12 sec.)	-	104.8	2112	843

Oil temperatures: LTP 101-600 & LTP 101-600A-1 and LTP 101-600A-1A

Minimum starting	Minus 35° C
Ground idle	Minus 35° C to 99° C
Flight idle	10° C to 99° C
Maximum continuous	20° C to 99° C

Propeller and propeller limits	2 Hartzell HC-83TN-3DL hubs with Hartzell LT 10282-9.5 R or LT 10282 H 9.5 R blades Diameter: 93 in. (maximum) minimum allowable for repairs 91 in. (no further reduction permitted). Pitch setting at 30 in. station: Mechanical reference stop 20° Reverse -11° Feather 85.5°	
Airspeed limits	Vmo (Max. operating speed)	220 knots up to 10,000 ft. Decrease 4 knots per 1,000 ft. above 10,000 ft.
	Va (Maneuvering speed)	157 knots
	Vfe (Flaps extended speed)	140 knots
	Vle, Vlo (Landing gear extended or operating speed)	144 knots
	Vmc (Air minimum control speed)	89 knots
C.G. range	184.90 in. (4.696 m.) to 191.65 in. (4.868 m.) at 9480 lbs. (4300 kg) 183.17 in. (4.653 m.) to 193.97 in. (4.927 m.) at 8377 lbs. (3800 kg) 180.08 in. (4.574 m.) to 193.97 in. (4.927 m.) at 7495 lbs. (3400 kg) Straight line variation between points given.	
Empty weight C.G. range	None	
Datum	The reference plane is 226.97 in. (5.766 m.) before wing rear spar.	
Leveling means	Datum pads on passenger seat rails.	
Maximum weight	Ramp	9524 lbs. (4320 kg)
	Takeoff	9480 lbs. (4300 kg)
	Landing	8377 lbs. (3800 kg)
	Zero fuel weight	8377 lbs. (3800 kg)
Minimum crew	1 pilot	
Number of seats	10 (2 at + 75), (2 at + 105), (1 at + 123), (1 at + 142), (2 at + 161), (2 at + 190).	
Maximum baggage	400 lb. at + 271.0)	

IV - Model P.166 DL3 (Normal Category) (cont'd)

Fuel capacity		Capacity	Usable	Arm
	Tank	Gal.-Lt.	Gal.-Lt.	In. / m.
	Main LH	56.5/214	49.4/187	209.4/5.320
	Main RH	56.5/214	49.4/187	209.4/5.320
	Aux. LH	88.2/334	85.8/325	199.6/5.069
	Aux. RH	88.2/334	85.8/325	199.6/5.069

See Note 1 for data on unusable fuel.

Oil capacity 5.5 USG (21 lt.) total oil capacity at +204.7 in. (5.200 m.) includes 4.5 USG (17 lt.) in tanks.
See NOTE 1 for data on undrainable oil.

Maximum operating altitude 24,000 ft.

Control surface movements	Wing flaps		Maximum	45°
	Aileron	Up 25°	Down	19°
	Aileron tab	Up 17°	Down	17°
	Elevator	Up 26°	Down	16°
	Elevator tab	Up 4°	Down	27°
	Rudder	Right 27°	Left	27°
	Rudder tab	Right 21°	Left	21°

DATA APPLICABLE TO ALL MODELS

Serial Nos. eligible The Registro Aeronautico Italiano (RAI) Certificate of Airworthiness for Export endorsed as noted below under "Certification Basis" must be submitted for each individual aircraft for which application for certification is made.

Certification basis Models P.166, P.166B and P.166C:
CAR 10. CAR 3 dated May 15, 1956 including Amendments 3-1 and 3-2.
Type Certificate No. 7A4 issued July 31, 1958 (Model P.166); Models P.166B and P.166C added November 2, 1965.
Date of Application for Type Certificate: October 31, 1957.

Model P.166 DL3:
FAR 21.29. CAR 3 dated May 15, 1956 including Amendments 3-1 and 3-2, and the following paragraphs of FAR 23 including Amendments 23-1 through 23-17: 23.155, .253, .335, .361(a)(3), .367, .371, .473(c), .629(e), .901 through .1193, .1305, .1337, .1441 through .1449, .1505, .1521, 1527, .1545, .1555, .1583, and .1585. SFAR 27, FAR 36 including Amendment 36-9. In addition, the T.C. holder has voluntarily complied with the following later FAR 23 requirements; 23.21 through 23.253 at Amendment 23-17; 23.1203 at Amendment 23-18; and 23.1353 at Amendment 23-20.

Import requirements A U.S. Certificate of Airworthiness may be issued on the basis of a Certificate of Airworthiness for Export signed by a representative of the Registro Aeronautico Italiano (RAI), containing the following statement:
"The airplane covered by this certificate has been examined and found to conform to the type design approved under U.S. Type Certificate No. 7A4."

Equipment	<p>The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. In addition, the following items of equipment are required:</p> <p>(a) Pres-stall warning indicator Safe Flight Instrument Corp. Model S (Wing detector 164).</p> <p>(b) Airplane Flight Manual R. Piaggio:</p> <ul style="list-style-type: none"> - Report 6083/2 (Model P.166) RAI approved June 14, 1961. - Report 6124/2 (Model P.166B) RAI approved April 13, 1963. - Report 6148/2 (Model P.166C) RAI approved June 8, 1965. - Report 6390 (Model P.166 DL3) RAI approved July 21, 1978 and subsequent approved amendments.
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NOTES

NOTE 1. Current weight and balance report, including list of equipment in certificated empty weight, and loading instructions, must be in each aircraft at the time of original certification.

The certificated empty weight and corresponding center of gravity locations must include system oil of 15 lb. at (204.7) and 14.4 lb. unusable fuel at (208) for Models P.166, P.166B or P.166C with tip tanks; for model P.166C without tip tanks unusable fuel is 7.2 lb. at (209.4).

For Model P.166 DL3, system oil is 44 lb. (20 kg) at + 204.7 in. (5.200 m.) including 6.6 lb. (3 kg) of undrainable oil, and unusable fuel is 134 lb. (61 kg) at + 206.5 (5.245 m.) including 7 lb. (3.2 kg) of undrainable fuel.

NOTE 2. The following placard must be displayed on the instrument panel in full view of the pilot:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS OF THE AIRPLANE FLIGHT MANUAL. NO ACROBATIC MANEUVERS, INCLUDING SPINS, APPROVED".

NOTE 3. Other approved seating arrangements are:
for P 166 and P.166B models: No. of seats : 10 (2 at (74.8), 2 at (103.5),
2 at (131.9), (2 at (159.8), 2 at (192.9)).

NOTE 4. Optional Changes for Model P.166:

Change in the airspeed limits:

- increase in Vne from 192 knots to 226 knots
- increase in Vno from 152 knots to 179 knots

Change in the forward limit position of C.G.:

- Oil limits 183.2 in. to 196.7 in. with 6720 lb.
186.1 in. to 194.1 in. with 8115 lb.

Straight line variation between points:

New limits see Page 1.

Passenger seating arrangement:

- introduced new allowable seating arrangement (See NOTE 3).

Maximum baggage in rear compartment (300 lb. to 400 lb.)

Changes in airspeed limits, C.G. limits, seating arrangements and rear compartment maximum baggage are approved as optional for all serials model P.166 and require RAI approved P.166 Airplane Flight Manual Revision No. 11 dated May 28, 1965 and RAI-approved R. Piaggio P.166 Service Letter No. 166-18.

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